Abstract

In the DME fuel supply device for a diesel engine, the time necessary to retrieve DME fuel remaining in the injection system after stopping the diesel engine into the fuel tank can be reduced. In a non-injection state, a three-way valve (71) is controlled to be OFF to form a communication passage in the direction indicated by the arrow B and a two-way valve (72) is controlled to be ON. DME fuel delivered from a feed pump (5) is delivered to an aspirator (7), passed from an inlet (7a) to the outlet (7b) thereof and returned to a fuel tank (4). That is, the DME fuel circulates via the aspirator. A vapor-phase pressure delivery pipe switching solenoid valve (75) is controlled to be ON and opened so that flow can pass through a vapor-phase pressure delivery pipe (73) connecting the vapor-phase (4a) in the fuel tank (4) and the inlet of the fuel gallery (11). DME fuel in a liquid state remaining in the fuel gallery (11), an overflow fuel pipes (8) and (9) is delivered under pressure to a suction port (7c) by the high pressure of the vapor-phase (4a).